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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PATEL, JAY P	

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/904,009	CARVEY, PHILIP P.	
	Examiner	Art Unit	
	Jay P. Patel	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/12/2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-24 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 10, 12-17 and 19-25 of application number 09904313 (US Publication 2002/0048272 A1).

This is a obviousness-type double patenting rejection since the conflicting claims have not in fact been patented.

3. In regards to claim 1 of this application, claim 1 of the co-pending application number 09904313 discloses a router coupled to a plurality of external links transporting data packets to and from the router, the router comprising: a plurality of fabric routers, one or more external links coupled to each fabric router, the plurality of fabric routers interconnected by fabric links forming a Gamma graph interconnection network (see claim 1, lines 5-7 of the co-pending

application); and packets routed between external links by traversing one or more hops across the fabric links (see claim 1, lines 8-9 of co-pending application).

Claim 1 of the present application merely broadens the scope of co-pending application 09904313 claim 1 by eliminating packets routed between external links by traversing one or more hops across the fabric links (see claim 1 lines 8-9 of co-pending application 09904313). It has been held that the omission of an element and its functions is an obvious expedient if the remaining elements perform the same function as before. In re Karlson, 136 USPQ 184 (CCPA). Also note Ex Parte Raine, 168 USPQ 375 (bd. App. 1969); omission of a reference element whose function is not need would be obvious to one skilled in the art. Furthermore, a router coupled to a plurality of external links transporting data packets to and from the router constitutes a network of interconnecting devices external to the network. In essence the plurality of fabric routers (co-pending application) constitute a plurality of switching nodes interconnected by links (present application) and one or more external links coupled to each fabric router (co-pending application) constitute a plurality of devices coupled to the network via a plurality of ports (present application). Furthermore, a plurality of routers can interface devices in the network.

4. In regards to claims 3-7 and 10-24 of the present application claims 2-6, 9-10, 12-17 and 19-25 of the co-pending application 09904313 (herein referred to as the co-pending application) teach the following:

In regards to claim 3 of this application, the gamma graph interconnection wherein the Gamma graph interconnection network has a diameter (D) and a radix (.DELTA.), the radix greater than the diameter; the interconnection network being link fault tolerant by providing .DELTA.-1 alternative paths between any two external links, packets alternatively routed between external links over one of the .DELTA.-1 paths through the interconnection network having a hop distance greater than the diameter corresponds to claim 2 of the co-pending application.

In regards to claim 4 of this application, wherein each switching node is interconnected to a subset of adjacent switching nodes, each switching node having a bidirectional interconnection with one of the adjacent switching nodes with the remaining interconnections being primarily unidirectional corresponds to claim 3 of the co-pending application. It is noted that claim 3 of the co-pending application uses the term fabric routers instead of a switching node but these elements perform the same function.

In regards to claim 5 of this application, wherein the Gamma graph interconnection network having a radix equal to 8 and a diameter equal to 4 comprises: 3024 interconnected fabric routers; at least 24 external links coupled to each fabric router via ports; and at least 2 logical data channels supported per port, each channel having a bandwidth of at least 2 gigabits per second corresponds to claim 4 of the co-pending application.

In regards to claim 6 of this application, wherein the Gamma graph interconnection network provides a total bandwidth of at least 290 terabits per second corresponds to claim 5 of the co-pending application.

In regards to claim 7 of this application, wherein the Gamma graph interconnection network comprises: six or more interconnected fabric routers; at least one external link coupled to each fabric router via at least one port; and at least one logical data channel supported per port corresponds to claim 6 of the co-pending application.

In regards to claim 10 of this application, where at least one application specific module (ASM) providing an interface between at least one device and the switching node, the ASM transporting data packets from the at least one device to the bus corresponds to claim 9 of this application.

In regards to claim 11 of this application, wherein the plurality of buses are Infiniband buses corresponds to claim 10 of the co-pending application.

In regards to claim 12, where in the plurality of buses are capable of supporting one or more logical data channels per port configured corresponds to claim 12 of the co-pending application.

In regards to claim 13 of this application, wherein the one or more logical data channels are Infiniband lanes corresponds to claim 13 of the co-pending application.

In regards to claim 14 of this application, wherein the application specific module links to a network providing data, data processing, or data storage corresponds to claim 14 of the co-pending application.

In regards to claim 15 of this application, wherein the application specific module (ASM) is a network interface card corresponds to claim 15 of the co-pending application.

In regards to claim 16 of this application, wherein the network interface card is an Ethernet network interface card corresponds to claim 16 of the co-pending application.

In regards to claim 17 of this application, wherein the network interface card is an ATM network interface card corresponds to claim 17 of the co-pending application.

In regards to claim 18 of this application, wherein the application specific module (ASM) is a processor module corresponds to claim 19 of the co-pending application.

In regards to claim 19 of this application, wherein the application specific module (ASM) is a WAN interface card corresponds to claim 20 of the co-pending application.

In regards to claim 20 of this application, wherein the application specific module (ASM) is a POS interface card corresponds to claim 21 of the co-pending application.

In regards to claim 21 of this application, wherein the application specific module (ASM) is an Infiniband interface card corresponds to claim 22 of the co-pending application.

In regards to claim 22 of this application, wherein the network comprises a plurality of switching nodes interconnected by links forming an interconnection network having a diameter (D) and a radix, the radix greater than the diameter; a plurality of devices coupled to the network via ports; and the interconnection network being link fault tolerant by providing radix-1 alternative paths between

any two devices, packets alternatively routed between at least two devices over one of the radix-1 paths through the interconnection network having a hop distance greater than the diameter corresponds to claim 23 of the co-pending application.

In regards to claim 23 of this application, wherein the network comprises a plurality of switching nodes interconnected by links forming an interconnection network, each switching node interconnected to a subset of adjacent switching nodes, each switching node having a bidirectional interconnection with one of the adjacent switching nodes with the remaining interconnections being primarily unidirectional; a plurality of devices coupled to the network via ports; and packets routed among the plurality of devices by traversing one or more hops across the links corresponds to claim 24 of the co-pending application.

In regards to claim 24 of this application, wherein a plurality of switching nodes interconnected by links, the interconnection network capable of forming a Gamma graph interconnection network; a plurality of devices coupled to the network via ports; and packets routed among the plurality of devices by traversing one or more hops across the links is also claimed by claim 25 of the co-pending application.

5. Claims 2, 8 and 9 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 7 and 8 of copending Application No. 09904313 in view of Ioele et. al (US Publication 2002/0073337 A1)

This is a provisional obviousness-type double patenting rejection.

In regards to claims 2, 8 and 9 of the present application, claim 9 of the present application is dependent on claims 2 and 8 of the present application; therefore, claim 9 contains all the limitation of claims 2 and 8 of the present application. In further regards to claim 9, claim 8 of the co-pending application 09904313 claims a bus (see claim 8 line 2 of co-pending application 09904313); the bus coupled to a traffic manager transporting data packets from the one or more external links coupled to the fabric router via one or more ports (see claim 8, lines 3-5 of co-pending application 09904313). It would have been obvious in view of Ioele et. al (US Publication 2002/0073337 A1) to one skilled in the art to substitute a plurality of buses instead of a bus in the singular. Figure 3 in Ioele shows an internet security hosting apparatus inclusive of VLANS 341-345 that are coupled to switches 330 and 331 which are further connected to internal routers 320 and 321 which are further connected to main switches 315 and 316 which are further connected to routers 310 and 311 that provide access to the internet. In further regards, claim 8 of the co-pending application 09904313 also claims the bus capable of supporting a configurable number of ports, the bandwidth of a port being inversely proportional to the number of ports configured per bus (with regards to claim 2 of the present application). Furthermore, it would have been obvious to one skilled in the art in view of Ioele et. al (US Publication 2002/0073337 A1) that one or more external links coupled to the fabric router claimed in claim 2 of the present application constitutes each switching node coupled to at least one of the plurality of buses claimed in claim 8

of the co-pending application. Figure 1 in Ioele shows an internet hosting security apparatus inclusive of an Ethernet bus 160 coupled to routers 110.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 7 and 24 rejected under 35 U.S.C. 102(b) as being anticipated by Dally (WO 99/11033).

In regards to claim 1, Dally discloses a Network for interconnecting devices external to the network comprising a plurality of switching nodes interconnected by links forming Gamma graph interconnection network and a plurality of devices coupled to the network via a plurality of ports. In figure 1 Dally discloses a network comprising of multiple routers. The network further comprises of various regional network, various LANS and user terminals (see Figure 1 for details; see backbone network, regional network and LANS in figure 1). The routers in Dally's disclosure are connected in a Gamma graph interconnections because, the number of links connected to the router (for traffic coming in or going out), is greater than the maximum number of hops it would take for the router to reach any other router. Therefore, the radix of the network

is greater than its diameter. For example a router in the backbone network illustrated in figure 1 has five links connected to it and it would take a maximum of three hops to reach any other router within the network from a particular router in the backbone network.

With regards to claim 7, figure 1 in Dally anticipates all the limitations of the claim. As evident from figure 1, there are six or more interconnected switching nodes (routers), there is at least one device coupled to each switching node via ports (a router connected to another router is a device coupled to that router) and at least one logical data channel supported per port (each router can route data to a destination router or a user terminal; therefore, a data channel is supported on the ports).

With regards to claim 24 all the disclosure relevant to claim 1 is also relevant to claim 24. In further regards, the network of figure 1 in Dally's disclosure can be used to route packets from one source to a destination; therefore, the applicant's claim of packets routed among plurality of devices by traversing one or more hops across the links is anticipated by figure 1.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seema S. Rao 5/16/05

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